MONTANA DNRC

OIT
Office of Information Technology

# Strategic Plan 2018 - 2020

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## Letter From the CIO

*Industries across the globe no longer rely on IT services to support the business of the organization…they integrate IT into the business of the organization to drive organizational success. Indeed, IT is the significant driver by which the greatest efficiencies and impacts of an organization are made, because this is how the vast number of customers and citizens are engaging their daily lives.*

*My over-arching goal for this Strategic Plan is to align the efforts of the Office of Information Technology with the business goals of the department's programs. To that end I have constantly challenged our team to provide IT-driven business solutions that promote the success of DNRC staff in serving the citizens of Montana through natural resource management. It is paramount for us to mature OIT's service posture and to ensure our objectives provide meaningful impact to the organization. For me, DNRC is one of the most rewarding means of serving Montana, and I have truly enjoyed working alongside of our staff across the state, from the timber stands of the northwest to the creek bottoms of the east.*

*Thank you for allowing me and the Office of Information Technology the opportunity to serve with you and to achieve these goals together. I hope you are able to recognize this effort both in this strategic plan and in our daily activities throughout the years ahead.*

*Kreh Germaine*
*Chief Information Officer, DNRC*

# Executive Summary

It is time for a new approach to strategic planning when it comes to technology at the Department of Natural Resources and Conservation. The best strategic plans will be designed to propel the business toward success in its mission, and for state government, this is no different. The Department's Office of Information Technology wants to develop a plan that identifies each division's primary business goals and objectives, and then align OIT's endeavors as a business partner to support the success of those priorities, thereby furthering the mission of DNRC.

To accomplish this goal, in the fall of 2017 the OIT leveraged our membership with *Info-Tech,* a leading research and advisory company focused upon IT professionals, to help guide us in a plan to develop a more meaningful strategy. This was a significant departure from how we operated in the past and changing the culture of how we think about strategic planning was not easy; but I can say it has truly been worth it, as we have a strong path for success now laid before us.

To summarize our effort, we met with leadership staff and stakeholders across the organization. We pushed the conversation to capture each division's business goals for the next biennium. We conducted a strategic alignment survey with the Director and Chief of Staff to match the objectives we were formulating with their goals for the organization. We conducted numerous meetings and strategic planning sessions to organize all the information we were gathering. We then conducted follow-up discussions to ensure we were capturing information correctly.

Finally, we synthesized all the business drivers we were able to capture into common themes, and slowly the strategic initiatives started to emerge. The exciting result of this new planning effort are the five strategic initiative categories presented in this plan: *Customer Service, Application and Business Management, Infrastructure, Geospatial Integration*, and assurance for *Continuity of Operations*. Each stakeholder that shares our mission to serve Montana through natural resource management will recognize business drivers significant to them in this plan and see how these initiatives are designed to help meet those needs.

The plan is intended to be a fluid and actively utilized document for OIT and the organization. The information technology industry changes too rapidly to plan detailed action items very far in advance, and our expectation is that priorities will change each year as new challenges arise, and new technologies and tools become available. We welcome new efficiencies and better ways of serving Montana and adapting this plan to meet those challenges is one we look forward to. By partnering together with the department's programs and integrating with enterprise services from the State Information Technology Services Division, we can see these plans become an effective reality.

*A biennial IT strategic plan is statutorily required of the department [MCA 2-17-523]. This document is intended to satisfy that requirement.*

*OIT Mission, Vision & Values*

## *Mission of the Office of Information Technology*

The Director's Office of Information Technology carries out the department's mission and statutory responsibilities by administering, managing, planning, and evaluating agency functions in the realm of Information Technology.

## *Vision of the Office of Information Technology*

To be a leader in providing superior and innovative information technology solutions that promote program success.

*OIT Core Values*

# CORE VALUES

PROFESSIONALISM. INNOVATION. PARTNERSHIP. SERVICE

## *Department of Natural Resources & Conservation Mission and Goals*

# *Mission of the Department*

To help ensure that Montana's land and water resources provide benefits for present and future generations.

Montana's constitution preamble states "We the people of Montana grateful to God for the quiet beauty of our state, the grandeur of our mountains, the vastness of our rolling plains, and desiring to improve the quality of life, equality of opportunity and to secure the blessings of liberty for this and future generations do ordain and establish this constitution." These expressed values are represented in the Department's mission and underlie all the programs and projects we work on every day.

# *Department Programs*

## Forestry

The Forestry Division promotes responsible and proactive stewardship of Montana's forests and rural lands. The programs help private landowners manage their forested lands, and help cities and towns develop vibrant parks, boulevards and natural areas. Staff respond to wildfires, insect pests and diseases, and advocate for sustainable forest management practices on private, state, tribal and federal forestlands. The DNRC forestry division values Montana's integrated forest industry and its social, economic, and environmental benefits. The division is headquartered in Missoula and consists of 3 Bureaus – Fire Protection, Forestry Assistance, and Business Management – and 19 Field Offices.

### *Business Goals:*

- Have a single business management solution that would allow the division to be able to easily see how funding was allocated, what was the return on investment of funding, and identify funding issues.
- Have a regular assessment regarding how resources from the Office of Information Technology (OIT) are effectively meeting Forestry needs.
- Have standardized procedures, processes, and solutions to archive digital media for long term storage and retrieval.
- Ensure that Forestry headquarters and field offices have enough network bandwidth to fully utilize state, federal, and commercial hosted applications.
- Deploy an integrated solution that allows personnel across the state to manage wildland firefighting resources and provide a near real-time status to the appropriate stakeholders. Incorporate a public-facing interface to help citizens understand how wildfires will impact them.
- Ensure Forestry firefighting personnel have the appropriate geographic information system (GIS) resources during fire season.
- Ensure that the division's mission critical software applications are fully supported and will run on the IT infrastructure of DNRC.
- Improve the capability of citizens to engage a forester and provide the division with the capability to capture information about citizen engagements in the Forestry program.

## Trust Lands

The Trust Lands Management Division (TLMD) manages the State of Montana's trust land resources to produce revenues for the trust beneficiaries while considering environmental factors and protecting the future income-generating capacity of the land. These lands and the revenues from their management are specifically set aside to provide income for the state's educational institutions. The division consists of 4 Bureaus – Real Estate Management, Forest Management, Agriculture and Grazing Management, and Minerals Management. Each of the four bureaus of the TLMD manages a different aspect of these parcels, but they all are tasked with making the most efficient use of the land and resources on or under that land to provide the largest possible return for the trust beneficiaries.

*Business Goals:*

- Improve organizational capability to increase revenues through better data-driven management decisions and workflows.
- Streamline data collection from field to file to better document land activities and revenue potential.
- Develop effective customer service through digital payment processing for citizen lessees.
- Achieve a revenue target rate of return of 3%.

## Water Resources

The Water Resources Division carries out its duties for the purpose of promoting the general welfare and prosperity of the people of Montana. Sound coordination of the development and utilization of the state's waters allows the division to protect existing uses and to promote adequate future supplies for domestic, industrial, agricultural, and recreational uses along with the conservation of water for wildlife, aquatic life and other beneficial uses.

The Water Resources Division is responsible for managing Montana's water for the present and future needs of its people through the State Water Plan. The division compiles accurate, up-to-date stream flow data from more than 90 monitoring gages, providing critical data for managing reservoirs, irrigation schedules, water rights permitting and adjudication, floodplain management, and other services for farmers, ranchers, citizens and communities. DNRC also manages the operation and maintenance of 24 state-owned dams and 250 miles of irrigation canals. The division consists of five bureaus – Water Adjudication, Water Rights, Water Operations, State Water Projects, and Water Management – and eight regional/unit offices.

*Business Goals:*

- Promote the wise use and conservation of Montana's water resources
  - Process all water right forms as efficiently as possible while ensuring that they comply with the criteria and processes established in statute and rule. Scan and maintain all water right records as required by the Montana Constitution.
  - Issue summary reports of water right claims in all first decree basins to meet the current legislative requirement of having all initial decrees issued by June 30, 2020. Continue to provide post decree assistance to the Water Court across the state and initiate limited examination work on approximately 90,000 claims in 43 basins pursuant to the Water Court's re-examination order.

- Manage and maintain state-owned water storage projects (24 dams including the Broadwater-Toston hydropower facility and 250 miles of canals) to maximize economic and water use benefits to agricultural producers and communities; ensure high hazard projects are maintained to current engineering standards and compliant with the State Dam Safety Act.
- Provide unbiased technical assistance, water resource planning support, and water resource educational information to water users and decision makers throughout the state. Implement recommendations in the 2015 State Water Plan. Provide technical and legal support for implementation of previously approved water compacts.
- Efficiently and effectively carry out the statutory duties of the department.

o Provide improved services to citizens and DNRC's programs by developing and utilizing IT services that are integrated between DNRC (Water Rights Bureau, Water Adjudication Bureau) and the Judicial Branch (Water and District Courts).

## Conservation and Resource Development

The Conservation and Resource Development Division (CARDD) provides technical and financial assistance to local governments, state agencies, and private citizens for conservation, development, protection, and management of the state's natural resources. The division provides extensive support to the 58 Conservation Districts responsible for the management of natural resources within their boundaries. The division also manages a significant number of resource development programs including renewable resource grants and loans, reclamation and development grants, regional water coordination assistance, conservation district water reservations, and drinking water and wastewater systems. The division consists of three bureaus - Conservation Districts, Resource Development, and Financial Management, along with 6 Administrative Attachments – Montana Sage Grouse Habitat Conservation Program, Montana Invasive Species Council, Flathead Basin Commission, Upper Columbia Conservation Commission, Rangeland Resource Committee, and the Montana Grass Commission.

*Business Goals:*

- o Continually improve community access to CARDD's technical and financial resources for their natural resource related projects.
- o Develop Collaborative Information Systems that allows interactive access to projects, documents, etc. for all stakeholders (agency staff, business partners, citizens, etc.) to maximize program impact while minimizing overall costs and resources required.
- o Develop effective Sage Grouse habitat conservation tools and compensatory mitigation systems to achieve statutory objectives and requirements.
- o Ensure program staff have adequate training to use the software and applications that drive our business.
- o Increase effective Stakeholder/Collaborator outreach through various media such as online video, live stream webinars, etc.
- o Achieve efficiencies with an integration of financial business systems toward a common operating platform for the entire agency.
- o Increase positive public relations outreach to effectively communicate the wealth of past, present, and future conservation efforts and the value provided by the program.

## Director's Office

The Director's Office carries out the department's mission and statutory responsibilities by administering, managing, planning, and evaluating agency functions in the areas of fiscal operations, human resources, information technology, legal initiatives, safety, and public information under the guidance of the director.

*Business Goals:*

- Provide leadership to the department in achieving its mission to serve the citizens through effective natural resource management.
- Provide clear legislative intent for the department's programs.
- Superior delivery of core central services that promote the success of the programs while meeting the departmental requirements for compliance with administrative rules.
- Successfully navigate the biennial legislative session for the appropriation and effective expenditure of funds to meet the mission of the department.

## Montana Board of Oil & Gas Conservation

The Montana Board of Oil & Gas Conservation (MBOGC) is a quasi-judicial body that is attached to the DNRC for administrative purposes only.

*Business Goals:*

- Protect citizens and the environment from the impacts of oil and gas activities.
- Identify projects and hire contractors for remediation efforts.
- Inspect oil and gas wells and operations to ensure compliance with state environmental laws.

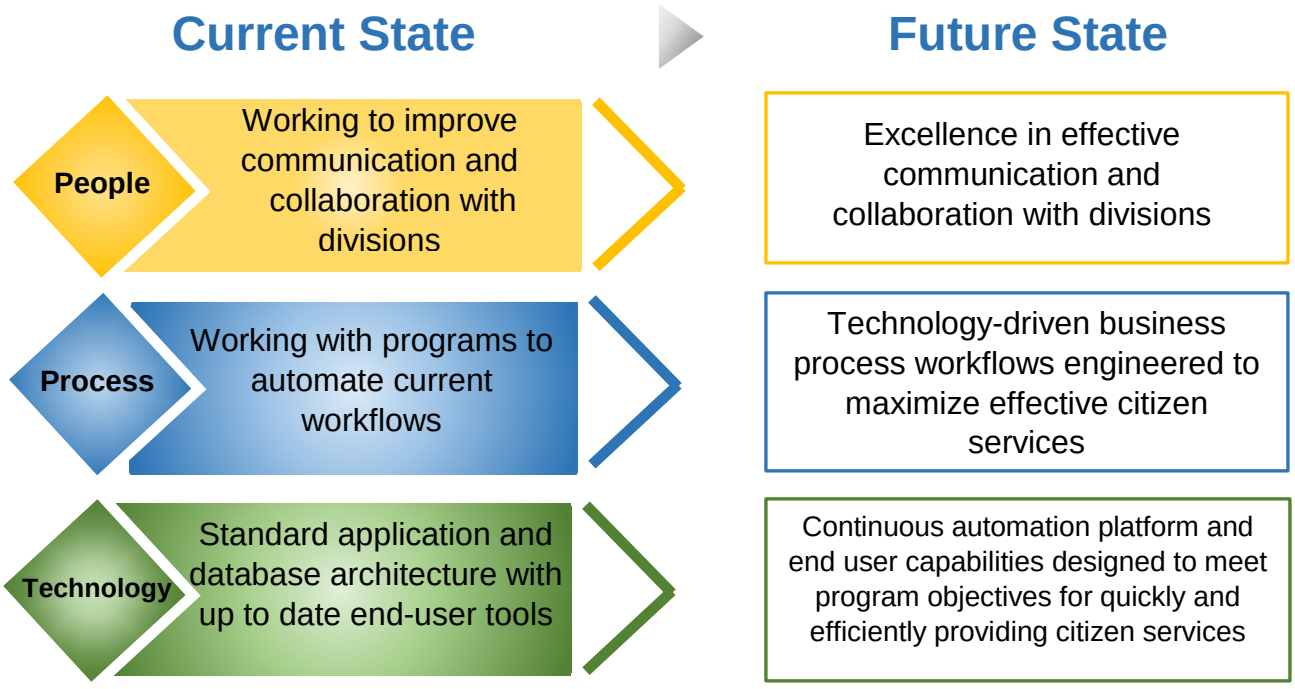
## *Current State of IT; Target State of IT*

### *Current State of Information Technology*

A recent article in the *Wall Street Journal* identified that IT-driven business processes have gone through three distinct phases: process automation, process reengineering, and now integrated management transformation. Through a business satisfaction survey conducted by the Office of Information Technology in 2016, the IT service maturity level of DNRC was at the base level of providing reliable infrastructure and service support, but not at a level of optimizing the business. This in part is due to inadequate IT resources dedicated to an agency of 550-plus full-time personnel, and in part due to the lack of business vision to drive business process transformation by leveraging IT. Consequently, DNRC's IT-driven business processes have been stuck at the first phase of the automation of existing business processes, with a number of departmental programs still preferring paper forms over digital workflows.

### *Target State of Information Technology*

The time has come for the Department of Natural Resources and Conservation to mature to the phase of process reengineering, where the business programs reengineer their IT-driven business process workflows to improve their effectiveness in serving the citizens. The Office of Information Technology has been working these past two years to see this goal achieved, first by automating workflows where achievable and now by driving reengineering discussions. By leveraging third-party business analysis experts, the OIT has helped both the Water Resources Division and the Trust Lands Management Division to embark on the design and build of new business management systems with this goal in mind. Looking ahead, the Office of Information Technology strives to deliver services and innovations that optimize the business of the department's programs, fostering the effective execution of technology related business projects and integrating new technologies to enable a higher level of program effectiveness in carrying out the mission of the agency.



## *Key Strategic Initiatives*

The Office of Information Technology worked diligently with our stakeholders to identify core business drivers across the organization. These were then synthesized into the following key strategic initiatives for IT in order to successfully support the business in the next biennium.

## Customer Service

*Creating a culture of excellence through professionalism, partnership, and visionary service*

The use of technology is an essential requirement for departmental staff to accomplish their work duties. In order to effectively utilize technology, high-quality customer service is a core component of improving and optimizing agency business processes. Through optimized business processes, DNRC staff will best serve the citizens of Montana. The Office of Information Technology has four main areas targeted to improve customer service: culture, communication, tools, and training.

### Culture

OIT staff strive to create a culture of excellence by espousing the core values of professionalism, partnership, and visionary service as they pursue the mission of the DNRC. Effective citizen services are the ultimate goal of OIT staff, and OIT efforts are to ensure each staff member is able to productively leverage technology to execute their departmental responsibilities.

### Communication

The key to effective and sustainable partnerships across the organization is communication. OIT recognizes effective communication as a vital component of department success. Our team is committed to engaged listening and informed discussion, so personnel can plan and execute projects with the highest technological success. In conjunction with internal agency communication, DNRC needs to improve communication with constituents, partners, and program members through the technology channels the public is using today.

### Technology Tools

The ability of technology to improve workflows and task execution is constantly changing, with new opportunities arriving each season. The OIT seeks to enable departmental staff to be positioned to leverage new technologies as quickly as they can be identified and delivered; our challenge is to do this while mitigating new risks and delivering secure solutions to common problems so that end users are continually empowered to achieve their greatness.

## IT Training

The best culture, communication, and tools are largely ineffective if DNRC staff are not capable of employing the virtues of each to their respective organizational responsibilities. Too often IT staff have seen all their effort to deliver prime solutions go underutilized because proper training was not delivered to change the business culture with how to utilize new tools. Staff training in technology that impacts their business operations must become a high priority across the organization.

### Priority Goals:

| Core Business Drivers Identified that this strategic initiative would meet |
|---|
| End User Productivity |
| Service |
| Collaboration |
| Improve Ticketing System |
| Improve Help Desk |
| IT Integrations with Business Operations |
| IT Training |
| eGovernment |
| Public Interface |
| Communication |

### 1. Improve Ticketing System Services to the Department:

Objective 1: Achieve a more robust and intuitive ticketing system with the ability to leverage ticket workflows

Objective 2: Explore expansion of a ticketing system for all of the Directors Office to provide a consistent and intuitive tool that customers would utilize when requesting services from the Director's office. This would provide the Director's office with the ability to identify areas of interest from customers, issues that are causing customers concern and identify topics that need to be addressed in a proactive manner to reduce problems.

### 2. Improve Technology Training Program

Objective 1: Develop a program for regular delivery of technology training to department staff.

Objective 2: Develop basic IT onboarding training for new employees.

### 3. Enhanced Collaboration and Communication

Objective 1: Identify and integrate optimal collaboration tool(s) according to program needs

Objective 2: Assist the organization in disseminating public information through effective communication platforms

### 4. Implement a codified methodology for providing professional services

Objective 1: Research, identify, and select a service methodology

Objective 2: Develop an implementation plan and start integrating service practices into OIT operational standards

## Applications and Business Management

*Improving the impact of IT in promoting program success*

Essential to effective business operations across the organization are organized IT-driven business applications, data analytics, and process workflows. The OIT provides leadership in developing effective governance and business processes that guide effective application design, development, acquisition, and implementation standards to facilitate efficient program operations.

The department needs more than just solid IT tools to thrive in the world of increased demands and shrinking resources to provide services. Leveraging department data to drive better business decision capability within the programs is a critical capability that must be developed and incorporated into regular program workflows so that precious resources are not poorly applied to inefficient practices.

### Governance & Leadership

Providing a structure for making sound decisions is healthy for any organization, and government is no exception. The OIT is leading by implementing a healthy governance framework for IT-driven business processes, starting with Geographic Information Systems. The next framework to be developed will be mobile application design, followed by business data management and records management.

### Application Enhancements & Design

Allowing business applications to fall into the category of 'legacy applications' is detrimental to the forward progress of the department. With the limited resources available in the OIT, legacy applications consume a disproportionate amount of available resources that prevents research and integration of new advantageous application enhancements. As a result, all programs are held back from achieving their potential due to the legacy applications of others. Replacing legacy applications is essential, and developing a business practice of allocating funding for system currency not only is wise by keeping maintenance costs low, it improves system security and allows staff to focus on integrating new functionality faster, thus delivering a quicker return on investment to the programs and the citizens they serve.

### Business Intelligence and Analysis

To excel at natural resource and conservation management in the next decade, the Department of Natural Resources and Conservation must learn to leverage the vast trove of data they have from the past several decades of service to the citizens. The OIT seeks to deliver value through the digital management of the department's data with an eye to the future of how resource management will be conducted. With proper 'Big-data' style practices today, programs will be well positioned to make data-driven decisions that will produce improved management results for tomorrow.

Priority Goals:

## 1. Facilitate a business analysis for major DNRC programs to guide the development of IT solutions and optimized workflows

Objective 1: Leverage the business analysis study for the Water Resources Division to continue the development phases of the new Water Rights Information System.

Objective 2: Leverage the business analysis study for the Trust Lands Management Division to procure and build a new Trust Lands Management System with its enhanced workflow designs.

Objective 3: Guide a business analysis project for other major DNRC divisions or programs.

| Core Business Drivers Identified that this strategic initiative would meet |
|---|
| Operational Analysis |
| Business Intelligence (BI) |
| IT Procurement Process |
| Governance & Leadership |
| Digital Marketing |
| Core Applications |
| Decision Making |
| Business Analysis |
| Enterprise Financial System |
| Improve Workflow Efficiency |
| Cross Agency Data Sharing |
| Electronic Payment Processing |

## 2. Implement a stronger governance framework and associated practices for the department

Objective 1: Implement the new GIS governance framework such that programs are empowered to pursue successful implementations of GIS technology to aid their program objectives

Objective 2: Develop and deliver a mobile application governance framework that facilitates field staff operations

## 3. Develop a capability for data-driven business intelligence & analysis

Objective 1: Partner with experienced entities to utilize our data for driving business value to the organization and Montana

Objective 2: Develop the technical capability for programs to leverage business intelligence for ongoing operations

## 4. Enhance, develop, or procure key business applications

Objective 1: Develop a Land Use Specialist Agriculture & Grazing mobile inspection application that streamlines data workflow from field to system

Objective 2: Develop the new professional performance review system (MAPP) and support its rollout to the department.

Objective 3: Procure or Develop a new enterprise financial system for all divisional programs

Objective 4: Support the development of the Sage Grouse Habitat Quantification Tool; a Fire financial tracking tool; the new Water Rights Information System; the new Trust Lands Management System; an improved Grant

Tracking System; a new Oil & Gas management system; and/or other key systems and mobile applications as identified by the Director or Leadership staff.

## 5. Enable electronic payment processing for key programs

Objective 1: Identify and integrate online payment processing for Trust Lands Management Division programs

Objective 2: Expand online payment processing to other divisions as feasible

## Geospatial Integration

*Leveraging spatial data and remotely sensed information to drive intelligent business operations*

Spatially enabled data and remotely sensed information (RSI) have revolutionized natural resource management practices. This technology is continually advancing in both data quality and diversity. The integration of remotely sensed information with spatially-enabled business data will continue to drive resource efficiencies and program effectiveness in natural resource management.

The Office of Information Technology recognizes the continual need to incorporate spatial data and associated workflows into virtually all agency operations. The components for success in this realm are threefold: Geospatial Data Management, Data Acquisition and Distribution, and Emerging Spatial Data Technologies.

Continued optimization of enterprise resources that leverage spatial data and remotely sensed information is recommended for intelligent program business operations. In June of 2017, the OIT procured the Department's first UAV (drone) with the goal of leading the department's programs in realizing the potential the technology has to significantly improve workflow efficiency and data-driven business decisions.

### Priority Goals:

| Core Business Drivers Identified that this strategic initiative would meet |
|---|
| Satellite Imagery |
| Unmanned Aerial Vehicles |
| Light Detection & Ranging |
| NAIP Imagery |
| Unmanned Submersible Vehicles |
| Budget & Resource Constraints |

### 1. Geospatial Data Management

Objective 1: Optimize enterprise spatial data management standards to accommodate business systems integration for informed decision making.

Objective 2: Develop data migration paths to populate stand-alone or siloed datasets into an enterprise storage environment.

### 2. Data Acquisition and Distribution

Objective 1: Research, identify and select a unified platform for authoritative spatial data access and distribution to agency staff and external end users.

### 3. Emerging Spatial Data Technologies

Objective 1: Working with the Director's Office and agency program staff, develop the policy for UAV operations and data management.

Objective 2: Develop standard data acquisition workflows to integrate UAV data into program business operations.

Objective 3: Optimize mobile data collection platforms for accessibility and integration into current or future program workflows.

## Continuity of Operations

*Managing Risk to protect department operations and user data.*

Ensuring services are operating and data remains secure is a challenge that every organization must face. The risks to operational continuity range from that of the natural world (e.g. earthquakes, power and network interruptions, fire and flood) to the criminal intent of the cyber world (e.g. malware, ransomware, information theft, or loss of control of our systems and data). Cyber threats in particular continually increase as the world of random hacking has given way to organized cybercrime and rogue-state targeted attacks. The stakes at hand have never been higher as criminal cyber operations have become a multi-billion-dollar industry. Today this trend for financial gain has expanded into the ability to manipulate the populace to draft political power to the leadership of one's choosing. The ultimate victims are the very citizens that we so passionately serve.

At DNRC, ensuring operations continue in the midst of such threats is led by two broad fronts: Cyber security to protect against such attacks, and cyber recovery to ensure the department can recover if security fails.

### Security

OIT has a three-pronged approach to security: securing technical infrastructure, securing applications and data, and securing end-user activities. Each is a critical component to a comprehensive security program, and a weakness in any can bring disaster to the others. Of the three, the most commonly exploited venue to breaching our protection is through our end-users. These are the most targeted by the ever-improving clever mechanisms through which cyber attackers seek to gain a foothold within our department's defenses.

### Disaster Recovery

Disasters can come in many forms, and for any business a successful cyber-attack is truly a disaster, and even more so if data is stolen, held hostage, or un-recoverable. The loss of control over one's data can result in a tremendous impact to users, citizens, and the organization. At the DNRC, a years' worth of data represents roughly 1.2 million hours of work, and the resulting value of such work to the citizens and the state of Montana is millions of dollars. Consequently, the department needs to identify the correct balance between the value of risk mitigation and the expense of loss, and the OIT is working to guide this effort.

Priority Goals:

| Core Business Drivers Identified that this strategic initiative would meet |
| --- |
| Security<br>Applications & Data<br>Disaster Recovery<br>Infrastructure Management |

## 1. Review and improve the departmental disaster recovery posture in architecture, plans, and procedures

Objective 1. Complete the ransomware event mitigation and response plan.

Objective 2. Conduct a table top exercise with the DNRC leadership to prepare them for a major cyber security event.

Objective 3. Partner with the Office of the State CIO on a disaster recovery drill to test and improve the processes and procedures for recovering departmental applications and data from a cyber incident.

Objective 4: Identify and plan the migration to the best secure, reliable, and affordable systems environment available in accordance with the level of determined data value and State CIO approval.

## 2. Review and improve internal security architecture, plans, and procedures

Objective 1. Identify and document the critical processes and procedures that are needed regarding current cyber threats for malware, ransomware, and data corruption, or other threats as warranted.

Objective 2. Conduct a table top exercise with all OIT personnel to educate them on their roles and responsibilities during a cyber security/disaster recovery event.

## 3. Provide targeted information to agency personnel to educate them on security best practices.

Objective 1. Enroll agency personnel in annual security training that is targeted based upon their position inside the organization and pertinent to a natural resource organization.

Objective 2. Provide regular information announcements to agency personnel to educate them on current security risks and steps they can take to mitigate these security risks.

# Infrastructure

*Ensuring computing resources are proficient and available*

In order for the department's staff to maximize their impact for citizen services, they need to have computing resources ready and available to enable them to work to their full potential. Promising technologies to increase computing potential include virtual computing, cloud-based technologies, increased data throughput, intuitive mobile applications, and digital data management, to name a few. By implementing such state of the art technologies to deliver improved services and cost-effective solutions, the OIT lays the foundation for future program success.

## Mobile Infrastructure

Technologies such as virtual desktops, mobile device platforms, and cloud based services allow DNRC staff to accomplish their work while on the move better than ever before. By continuing to adapt to improve platforms and mobile solutions and devices, staff increase their efficiency by having the information needed readily available while diminishing the time necessary to leverage new data to make decisions. This drastically shortens the workflow pipe from field to data system to intelligent business decision making.

## Continuous Deployment

By implementing a continuous deployment model using application and database containerization techniques, OIT staff can test and deploy modifications and updates in real time with minimal impact to users. This allows for increased system security and availability as applications can be killed and re-spawned across a continuous platform array. It allows for segregation and testing of various components in a production-like scenario before rolling out to users, allowing a faster time to production and reducing risk to the organization.

## Electronic Records Management

An area highlighted by numerous program staff is the need to digitize their records management systems so that the information may be readily available to decision makers across the organization both now and into the future. This improves staff efficiency, reduces physical storage needs, and can enable the public to quickly find program information with less reliance upon department staff. It also reduces the risk of record loss by allowing data to be redundantly stored instead of in a single physical location.

Priority Goals:

| Core Business Drivers Identified that this strategic initiative would meet |
|---|
| Cost Savings Initiatives/Strategies |
| Deployment Automation |
| Network Bandwidth |
| Electronic Data Storage (ECM) |
| Cloud Environment |
| VDI |
| Field Data Collection & Support |
| Mobile Device Platform |
| Asset Tracking & Management |

## 1. Mobilization Technologies

Objective 1. Pilot, train staff, and deploy virtual desktop infrastructure to improve service efficiency, security, and reduce computing costs

Objective 2. Increase mobile platform standards and utility across the organization

Objective 3. Continually work to provide sufficient network bandwidth for all program operations

## 2. Continuous Deployment

Objective 1. Identify and select a continuous automation platform; obtain needed staff training to implement identified solution

Objective 2. Publish key applications in the continuous deployment environment

## 3. Employ Digital Records Management

Objective 1. Optimize the enterprise content management solution for DNRC programs

Objective 2. Facilitate program migration to leverage digital records management

## 4. Leverage Software as a Service (SaaS) and cloud-based solutions where optimal

Objective 1. Reduce need for OIT staff to manage platforms, instead investing staff resources into the integration of technology and program business solutions

Objective 2. Improve security posture through secure cloud environments and continuous deployment structures.

## 5. IT Resource asset tracking and management

Objective 1: Implement an effective IT asset tracking solution to streamline delivery, service, and replacement of IT solutions

## Funding Opportunities, Concerns & Constraints

Information Technology is often leaned upon to make up the difference in operational challenges across the globe. With the rapid pace of technological development, potential efficiencies and returns on investment are constantly arising, yet often require an initial investment in order to move ahead where those efficiencies can be realized. When that investment must be foregone, programs must rely upon aging systems that become costlier to maintain, hamper opportunities for streamlined workflows, and delay improvements to citizen services due to the legacy system's technological limitations.

Funding, therefore, is constantly a concern; and the judicial use of funds to achieve desired efficiencies and greater impact for dollars spent is constantly a goal of the Office of Information Technology on behalf of the department. The proposed objectives in this plan are no exception.

The Office of Information Technology has designed the objectives within these strategic initiatives largely with the assumption that the resources available are those already in existence within the department. The extent that the objectives can be developed, however, will be determined by the amount of resources that can actually be contributed to each objective. The combined constraint of overextended IT staff and limited IT project funding will force several of these objectives to be postponed indefinitely. The reality is that these resource challenges limit the engagement of technological opportunities to improve workflows and services and will continually be a major inhibitor to government service improvement.

## Major Project Initiatives

| Item | Description |
|---|---|
| Project Name | Trust Lands Management System II (TLMS II) |
| Project/program purpose and objectives | The new Trust Lands Management System will be a business data management system for control and management of the Montana State Trust Lands.<br>The new system will be a web-based land and fiscal management system having direct integration with GIS technologies and web-based information sources. The system will track data pertaining to the surface and subsurface resources and multiple uses of those resources on State Trust Lands to maximize revenues for the State Land Trust beneficiaries. |
| Estimated Start Date | August 2018 |
| Estimated Cost | $2.5 Million |
| Funding Source 1 | *Operations* |
| Funding Source 2 | *TAC* |
| Funding Source 3 | |
| Annual Costs upon completion | *Est $25,000* |

| Item | Description |
|---|---|
| Project Name | Water Rights Information System (WRIS) |
| Project/program purpose and objectives | The WRIS is a critical computer system that is used by the Department of Natural Resources and Conservation (DNRC), the Montana Water Court within the Judicial Branch, and the citizens of Montana as the authoritative source of digital information concerning water rights across the State of Montana. The WRIS is currently being supported by technology that was developed in the late 1990s and deployed at DNRC in the early 2000s. The technology is nearing its end of life from the vendor and the costs of continuing to use it are increasing every fiscal year.<br><br>In order to support the Constitutionally-mandated record keeping system of the water rights of the citizens of the state, DNRC needs to upgrade the WRIS to a newer technology that will meet current and future business requirements, allow DNRC to move forward with its strategic information technology goals with the WRIS, and ensure that the WRIS lifecycle is sustainable for the future.<br><br>The Water Resources Division (WRD) will also pursue development of an online system designed to simplify and improve the efficiency of the water measurement reporting process for both the public and department. |
| Estimated Start Date | Business Analysis and proof-of-concept pilot completed successfully. Imminent need to start on full upgrade project exists to meet needs and technology deprecation. |
| Estimated Cost | $3,970,730 through phase 3 not including internal personnel costs |
| Funding Source 1 | *Water Rights Appropriation* |
| Funding Source 2 | *General Fund* |
| Funding Source 3 | |
| Annual Costs upon completion | *tbd; The project will take a couple years to completion. Design for the new system is more efficient to maintain than the current legacy solution.* |

| Item | Description |
|---|---|
| Project Name | Sage Grouse HQT (Habitat Quantification Tool) |
| Project/program purpose and objectives | The Montana Greater Sage Grouse Mitigation System Habitat Quantification Tool identifies the defined processes and information necessary to quantify gains and/or losses of greater sage grouse (*Centrocercus urophasianus*) habitat caused by development, and alternatively to estimate conservation benefits resulting from activities which restore, enhance, or preserve sage grouse habitat. These are expressed as functional acres gained or lost and an associated score. Entities engaged in the Montana Mitigation System are expected to apply these processes, methods, standards and criteria when creating, buying, or selling credits in Montana.<br><br>This project is to take the policy-designed technical manual and build a geospatial application that measures, tracks, and reports upon these measures and feeds the information back into the Density and Disturbance Calculation Tool now in use. |
| Estimated Start Date | HQT Technical manual has been released; HQT build scheduled for fall 2018. |
| Estimated Cost | $360,000-$500,000 estimated; RFP tentative for fall 2018 |
| Funding Source 1 | *HB2 Statutory* |
| Funding Source 2 | *tbd* |
| Funding Source 3 | *tbd* |
| Annual Costs upon completion | *tbd* |

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The Office of Information Technology team for implementing this plan and carrying out their service to the Department with such excellence; and ultimately,

The staff of the Department of Natural Resources and Conservation for their partnership in carrying out the mission of providing the benefits of Montana's natural resources to present and future generations. You make this such a rewarding work.

*"Plans to protect air and water, wilderness and wildlife, are in fact plans to protect man."*

*- Stewart L. Udall*

*Appendix A*

# Integration with the State of Montana Enterprise Strategic Plan

Each State Department develops an IT Strategic Plan that is designed to best support operations that achieve the department's mission to serve the citizens of Montana. In addition, each department should work collaboratively with each other and the State CIO's office to pursue their business objectives in an organized manner that also supports enterprise efforts as outlined in the state strategic information technology plan developed by the State CIO. The DNRC IT Strategic Plan supports and conforms to the state strategic information technology plan of 2018-2020 as shown below.

| | |
|---|---|
| **Mission** | The Director's Office of Information Technology carries out the department's mission and statutory responsibilities by administering, managing, planning, and evaluating agency functions in the realm of Information Technology. |

## *Strategic Initiative 1. Customer Service*

Customer Service is directly tied to the State Strategic Goals of *Capacity*, *Capability*, and *State-of-the-Art*, "technologies that meet customer demand" and "that provide essential functionality for a diverse and engaged customer base" (State Goals 4, 5, and 3). DNRC has recognized that developing a service management culture that excels in communication, leverages state-of-the-art tools, and provides effective training on how to use such tools is essential to the operations of an effective organization.

| | | **State Strategic Plan Goal/Objective Reference** | **Agency Goal/Objective Reference** |
|---|---|---|---|
| **Initiative One** | Customer Service | State Goals 3, 4, and 5 | |
| **Objective 1.1** | Improve Ticketing System Services to the Department | State Objective 3.1 | D.O. Goals 3, 5, and 6 |
| **Objective 1.2** | Improve Technology Training Program | State Objective 4.2 | D.O. Goals 3, 5, and 6 |
| **Objective 1.3** | Enhance Collaboration and Communication | State Objectives 3.3 and 4.5 | D.O. Goals 3, 5, and 6 |
| **Objective 1.4** | Implement a codified methodology for providing professional services | State Objectives 4.4 and 4.5 | D.O. Goals 3, 5, 6 and 7 |

## *Strategic Initiative 2. Applications and Business Management*

Applications and Business Management supports the State Strategic Goals of *State-of-the-Art*, *Capacity*, *Capability*, and *Cost-Effectiveness*. DNRC intends to digitize records into an effective content management system (State Objective 4.6) that allows business analytics and intelligence (State Objective 4.4) to drive business decisions, more efficient workflows, and cost-effective service to citizens. Furthermore, by

developing a mature governance and leadership structure that guides standardized application development (State Objective 4.5), the Department will be able to better leverage SaaS and PaaS solutions (State Objective 6.2) that provide an optimal modern and intuitive experience for citizens and employees (State Objective 3.1).

| | | State Strategic Plan Goal/Objective Reference | Agency Goal/Objective Reference |
|---|---|---|---|
| **Initiative Two** | Applications and Business Management | State Goals 3, 4, and 6 | |
| **Objective 2.1** | Facilitate a business analysis for major DNRC programs | State Objectives 4.4 | D.O. Goals 3, 5, and 6 |
| **Objective 2.2** | Implement a stronger governance framework and associated practices | State Objectives 3.1, 3.3 and 4.3 | D.O. Goals 3, 5, 6 and 8 |
| **Objective 2.3** | Develop a capability for data-driven business intelligence & analysis | State Objective 4.4 | D.O. Goals 3, 4, 5, and 6 |
| **Objective 2.4** | Enhance, develop or procure key business applications | State Objectives 3.1 and 3.3 | D.O. Goals 3, 5, and 6 |
| **Objective 2.5** | Enable electronic payment processing for key programs | State Objectives 3.1, 3.3 and 6.1 | D.O. Goals 2, 3, 5, and 6 |

## *Strategic Initiative 3. Geospatial Integration*

Though geospatial integration is unique to the Department and not specifically called out in the State Strategic Plan, it still ties to important state strategic goals. By incorporating spatial analysis and remotely sensed information into business operations, the Department drives better business analysis (State Objective 4.4), cost-efficiencies (State Goal 6 – *Cost-Effectiveness*), incident response capabilities (State Objective 4.1), and citizen services that are germane to natural resources and conservation (State Objective 3.1). The Department also strives to share geospatial data and resources with other agencies, universities, and the public (State Goal 2 - *Shared*) as well as protect sensitive data (State Goal 1 - *Secure*).

| | | State Strategic Plan Goal/Objective Reference | Agency Goal/Objective Reference |
|---|---|---|---|
| **Initiative Three** | Geospatial Integration | State Goals 2, 3, 4, and 6 | |
| **Objective 3.1** | Geospatial Data Management | State Objective 4.4 | D.O. Goals 3, 5, 6, and 7 |
| **Objective 3.2** | Data Acquisition and Distribution | State Objective 4.4 | D.O. Goals 3, 5, 6, and 7 |
| **Objective 3.3** | Emerging Spatial Data Technologies | State Objective 3.1 | D.O. Goals 3, 5, 6, and 7 |

## *Strategic Initiative 4. Continuity of Operations*

Continuity of Operations has two major risk management components: security and disaster recovery. These tie to the State Goals of *Secure* and *Shared.* By necessity, security at DNRC incorporates the standards, best practices, common controls, security tools, and staff training (State Objectives 1.1, 1.2, 4.1, and 4.3) needed to maintain operations. Due to resource limitations, exercising automation, monitoring, partnerships, and internal reviews (State Objectives 1.3, 1.4, and 1.5) are strategically important. Disaster recovery directly ties to the state goals of *Capacity* and *Cost-Effectiveness*, specifically State Objectives 4.1 and 6.2.

| | | **State Strategic Plan Goal/Objective Reference** | **Agency Goal/Objective Reference** |
|---|---|---|---|
| **Initiative Four** | Continuity of Operations | State Goals 1, 4, and 6 | |
| **Objective 4.1** | Review and improve departmental disaster recovery architecture, plans and procedures | State Objectives 4.1 and 6.2 | D.O. Goals 3, 5, and 8 |
| **Objective 4.2** | Review and improve internal security architecture, plans and procedures | State Objectives 1.1, 1.2, 4.1, and 4.3 | D.O. Goals 3, 5, and 8 |
| **Objective 4.3** | Provide targeted information to agency personnel to educate them on security best practices | State Objectives 1.3, 1.4, and 1.5 | D.O. Goals 3, 5, and 8 |

## *Strategic Initiative 5. Infrastructure*

This initiative ties to all the State Goals, as the Department relies on the Office of the State CIO to provide a robust, secure, scalable, and cost-effective computing and storage environment with full disaster recovery capabilities in place. Specific to the Department's objectives, increasing network bandwidth to regional offices and mobile staff (State Objective 4.8) is vital, and organizing the mobile environment through standardization and virtual platforms (State Objectives 2.2, 3.2, 4.4) and leveraging enhanced shared services and cloud platforms (State Objectives 6.1 and 6.2) are key to staff effectiveness. Threaded through all infrastructure services is the need for security as indicated in State Goals 1 (*Secure*) and 5 (*Capability*).

| | | **State Strategic Plan Goal/Objective Reference** | **Agency Goal/Objective Reference** |
|---|---|---|---|
| **Goal Five** | Infrastructure | State Goal, 1, 2, 3, 4, 5 and 6 | |
| **Objective 5.1** | Mobilization Technologies | State Objective 4.8 | D.O. Goals 3, 5, 7, and 8 |
| **Objective 5.2** | Continuous Deployment | State Objectives 2.2, 3.2, 4.4 | D.O. Goals 3, 5, 7, and 8 |
| **Objective 5.3** | Employ Digital Records Management | State Objective 4.6 | D.O. Goals 3, 5, 7, and 8 |
| **Objective 5.4** | Leverage SaaS and Cloud-based solutions where optimal | State Objectives 6.1 and 6.2 | D.O. Goals 3, 5, 7, and 8 |
| **Objective 5.5** | IT Resource asset tracking and management | State Objectives 4.6 | D.O. Goals 2, 3, 4, 5, and 8 |

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